The Realities of Instructional Leadership: An Intensive Study of Four Inner City Schools

by Russell Gersten
William Green
Gary Davis

A decade ago, Dan Lortie (1975) wrote that the literature on education was "too frequently appalled with descriptions." In the past 10 years, we have seen a burgeoning of both an impressive increase in detailed descriptions of effective teaching practices and a few thoughtful approaches towards improving teaching staff development. Unfortunately, these have been coupled especially since the release of A Nation At Risk (1983) with a phenomenal number of mandates, harangues, and hastily developed remedies for school improvement.

For no reason or another, much of the energy has gone into training principals to become instructional leaders. States such as Kentucky, California, and Texas have recently mandated "crash" training for principals in clinical supervision, procedures for evaluation, and/or other aspects of instructional leadership. These mandates and courses are loosely based on the early research of Edmonds (1979), Webers (1971), and Brookover and his colleagues (1979), who described the few truly effective inner city elementary schools as possessing principals who appeared as strong, charismatic instructional leaders with high expectations, and who actively monitored students' progress through the curriculum.

Several years ago, in "The Principal as Instructional Leader: A Second Look," (Gersten, Carmine, and Green, 1982), we argued that one cannot expect these "knight in shining armor" suddenly to emerge. Like Edmonds, we saw a need for an individual knowledgeable in all aspects of the instructional program, and able to support teachers and provide specific help to teachers when problems arose. But unlike Edmonds, we thought this person need not be the principal. In many ways, it seemed that an individual such as a curriculum supervisor, master or mentor teacher, or remedial reading specialist who could work independently to perform this function. On the basis of our experience in Project Follow Through, where instructional programs succeeded despite different, and occasionally antagonistic principals (see Meyer, Gersten, and Guthn, 1985), we concluded that it is not terribly important who performs these activities, as long as the principal or central administration doesn't actually undermine their work (Berman and McLaughlin, 1977). Often principals are not in the best position to perform many of these activities, because of the other responsibilities which they have (Pino and Morris, et al., 1983). Their lack of both training and orientation towards instructional concerns (Lortie, 1982), and the study of educational leaders have been appalled with descriptions.

Videodisc Instruction

Teaching Fractions to Learning Handicapped and Remedial Students

by Bernardette Kelly
Douglas Carnine
Russell Gersten
Bonnie Grossen

The National Assessment of Educational Progress reported that, national in performance of fraction computation is low, and students seem to have done their computation with little understanding (Lindquist, Carpenter, Silver, & Matthews, 1983). For example, the assessment found that only one-third of the U.S. seventh-graders could add 1/3 and 1/3. The process is even more pronounced for handicapped students.

Research on effective instructional practices with special education students gives mixed clues about how to improve instruction. Englund (1984) measured mildly handicapped (M.H.) students' growth on a range of basic skills measures and correlated this growth with observed teacher performance. More effective teachers (classified on the basis of high student academic gain) provided appropriate academic feedback to students more frequently than did less effective teachers. The more effective teachers also maintained pacing and higher student success rates throughout each lesson. This set of variables has been found to be effective with low performing students in regular classroom settings (Good & Grous, 1979; Gersten, Carmine & Williams, 1982; Rosenshine, 1980).

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12th Annual Eugene Direct Instruction Training and Information Conference August 4-8, 1986

Presenters include Zig Engelmann, Doug Carnine, Jean Osborn, Wes Becker, Bob Dixon, Randy Sprick, Geoff Colvin, Marilyn Sprick, Phyllis Haddox, Gary Johnson, Gary Davis, and other DI authors and Trainers

Sessions on all available DI programs and techniques. Special Keynote on Becoming a Nation of Readers, The Report of the Commission on Reading

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DIREC INSTRUCTION NEWS, SPRING, 1986 1
DI Professors Under Attack at Boise State University

Editors note. The following article from the BSU The University News and a flyer written by Students for Academic Freedom in Education (S.A.F.E.) are about two DI professors who are in trouble because of their educational beliefs. The Association for Direct Instruction is actively supporting their defense.

RESIGNATIONS REQUESTED

by Mark Peters
The University News

Special education professors Mary Anne Wheeler and Maria Collins were recently asked to resign by the College of Education administration. Wheeler, who has taught at BSU since August of 1985, said that after being asked to resign, she received a letter on Feb. 27 stating that her contract for next year would not be renewed. Collins, who is a second year teacher at BSU, said that as of now, she still holds her contract. Both Wheeler and Collins said they were asked for their resignations because of their support of an organization in teaching the direct instruction model to their students.

Direct instruction is a method of teaching that involves the classroom as a whole in an intense learning program. The method involves every student at the same time, and "leaves nothing to chance; everything you want the children to learn, you teach them directly," according to Lynn Jeffers, a special education teacher in Nampa who is pursuing her master's degree and has received counseling from Collins.

Boiling, whose work includes more than 200 presentations in the western U.S. and Canada, said the main "misconception" that the administration is trying to refute is that it's not just a learning style. She added that direct instruction involves teaching comprehension and cognitive-oriented tasks.

Wheeler said one reason the model is not popular with some people is because it is a lot harder to implement than some other programs.

A petition, distributed by students in the education field, had approximately 240 names attached to it, from students and teachers who support Wheeler and Collins. Students of Wheeler and one of Collins have circulated the administration to reconsider the decision.

Donata Bazzao, a teacher-education student, said, "the department as a whole is good, and I would work with a professor who I felt was exceptional, or an asset to the university. Students have posted leaflets saying that 60 percent of the special education department has been asked to resign and they want to know why."

"Imagine a teacher that you thought was the best that you have ever had, and then you find out they were asked to resign," Sheri Lockart, another student in the department, said. Wheeler said she has tried to carry out her teaching and administrative responsibilities in a way that the university's policies described in the faculty handbook. She also said she has "never known anyone to be asked to resign from their position because of it (D.I.)." However, she said, "there is a lack of resistance (to) using effective, well documented methods," but she said she hopes the problem can eventually be worked out.

The direct instruction approach, which was developed by Siegfried Engelmann [sic] at the University of Illinois, is a method of teaching which controls the details of what happens between students and teachers, and allows more information to be taught in a shorter period of time. Making Schools Work, by Robert Benjamin, describes a program of direct instruction in which teachers are provided with extensive training and are not allowed to deviate from the program. The book describes the curriculum as being "a set of skills to be mastered, not the nature of the individual, as with some other methods. It also said that direct instruction "has consistently delivered what other Special Education programs lack." Source: The University News, Volume VI, Issue 21, March 12, 1986.

Dr. Maria Collins and Dr. Mary Anne Wheeler are in the Special Education area of the Teacher Education Department at Boise State University. Both have impressive credentials.

Dr. Collins received her doctorate from the University of Oregon. She went through the Instructional Leadership Program, which is federally funded. Her record is a proven one which shows her to have significantly raised the performance levels of students labeled "dyslexic," "learning disabled," and as "corrective readers." Besides having a proven record practicing the principles which she teaches students, she also has recognition throughout the profession. She has given more than 200 presentations to school boards, school districts, and at symposiums in 6 western states and Canada since 1980. Included among there is a presentation on inferential statistics on the secondary handout at the 1985 Conference of the Association for Behavioral Analysis (the ABA). In addition, she has served as the technical advisor for a video disk program to teach math and science to secondary and college remedial students. She is co-author of a soon-to-be published reasoning skills program. This combination of supervisory and training skills demonstrated by a proven record make her an invaluable asset to her university and community. Clearly an exceptional addition to the BSU faculty in Special Education, it is inconceivable to us that the administration could want her to leave.

Dr. Wheeler received her doctorate from the University of Wisconsin at Madison which has an exceptional program for Special Education. Her credentials cover a wide range of professional experiences in Special Education. At the University of Wisconsin she lectured in the Teacher Training Program in the Department of Studies in Behavioral Disabilities. She serves as a clinical supervisor and assistant instructor in that program. She served as a teacher in the Adult Vocational Education program at the Central Wisconsin Center for the Developmentally Disabled in Madison, and was the supervisor for the Governor's Quality Programs. She has been served as an editorial, board member for Improving Human Performance Quarterly, International Society for Performance Instruction, Washington, D.C. She has also served as a consultant in training and Special Education and Expanding Horizons in Therapeutic Recreation. Clearly an exceptional individual clearly well qualified and an asset to BSU. Why ask her to leave?

The Department of Education claims to advocate academic freedom. We fear that this holds true only for those professors who adhere to the educational traditions and standards currently in vogue with the administration at BSU. Ever since its founding in 1958 BSU has been a university with pride, determination, enthusiasm, and above all academic quality. It's a university charged with energy, unfraid to try new ideas or to give you the freedom you need to develop your potential.

Considering these statements of support for academic freedom, why would the administration want Dr. Collins and Dr. Wheeler to resign? Both of these professors exhibit the qualities BSU says it wants for its students. They are exceptional individuals who are dedicated to meeting the educational needs of all children, especially low performers. They have devoted long hours to assure students of the best instructional techniques necessary to be used in the field. Would like the administration to respond to the petitions and letters in indicating overwhelming support for these professors from students, teachers, and community members. We would like justification for the administration's baseless decision. By S.A.F.E. (Students for Academic Freedom in Education)
Effects of Instructional Design Variables on Vocabulary Learning

by Cary Johnson
Douglas Carnine
Russell Gersten

Based on the premise that word knowledge correlates highly with reading comprehension (Anderson & Freebody, 1981; Meyzinski, 1983; Pearson & Graham, 1983; Tierney & Cunningham, 1984), several investigators have attempted to improve students' reading comprehension by teaching vocabulary. These studies represent a wide range of approaches in terms of instructional methods, number of words taught, selection of words to be taught, duration of interventions, and assessment procedures, and only a few studies were students identified as either low-performing or learning disabled. While all students performed better after improvement of vocabulary knowledge, the effects on reading comprehension have been extensively and varied.

All studies which involved directly teaching word meanings to students reported gains in word knowledge. However, the methods which were most successful in teaching new vocabulary consumed the most instructional time, and even then the gains, in terms of numbers of words learned, were modest. For example, an extensive vocabulary training program designed by Beck, Perretti, and McKenney (1982) taught 104 words in 75 thirty-minute lessons. At one average of 85 words that they did not know prior to the program. This learning rate is much faster than the rate of vocabulary growth generally observed in school. In contrast, the studies that have students engaged in small group, or whole class, instruction in the context of reading, with a focus on the acquisition of word meanings by middle handicapped students. Instructional Design

The Beck et al. (1982) vocabulary instruction study included teaching words as an instructional design variable. Research in computer-assisted instruction has demonstrated that several short-term teaching programs are more effective in improving the retention of words than a few massed reviews (Gay, 1971; Siegel & Mussell, 1984). Merrill and Salisbury (1984) propose a strategy that would provide no reviews during a CAI drill and practice program. New items are presented to students, and only items they do not know become part of a "working pool." The number of items in the working pool would be determined empirically. The student sets a specific criterion on an item in the working pool, that item is removed and placed in a "review pool." Each item in the review pool is reviewed on specified dates and a specified number of times. In summary, with below-average readers, words that receive repeated reviews are better remembered than words taught during five-day cycles, but not reviewed.

Instructional Design Differences Between the Software Programs Used in the Study

This study compares the effects of vocabulary teaching through CAI using: (a) a Small Teaching Set and cumulative review, and (b) a Large Teaching Set without cumulative review.

The distinctive instructional design features of the Small Teaching Set program include (a) individually assigned words which provide teaching and practice only on words the student does not know, (b) a practice set which consists of no more than seven words at any time, (c) a specified mastery criterion which must be met two consecutive lessons before a word is considered learned, and (d) cumulative review on learned words to ensure retention.

One major difference between the two programs is the size of the teaching and practice sets. The Small Teaching Set program (Carnine, Raskin & Granitz, 1982) contained 25 words in a teaching set of 50 unknown words, practice on a set of no more than seven words, and cumulative review on the set of ten words. The student must meet a specific mastery criterion on each word before it is removed from the working pool. The word is removed from the working pool after the first day of the week. The student then is asked to review words in the practice set. In this study, the program tests the student on new words and adds words the student does not know to the practice set.

The other program, the Large Teaching Set program, teaches words in larger sets of twenty-five. It is adapted from a commercial program developed by Davidson & Ekeret (1983). The student may choose to see the words in any of four types of formats: (a) a teaching display which shows the word, its definition, and one example sentence; (b) a multiple-choice quiz format; (c) an exercise in which a definition is displayed and the student must spell in the correct missing word to complete a sentence; and (d) an arcade-type game in which the student matches words to their definitions.

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Another difference between the two programs is that the Large Teaching Set program provides daily reviews on words in the student's teaching set. The Small Teaching Set program provides teaching and practice on sets of 25 words. Since the program keeps no cumulative record of student errors, no cumulative review is provided. Finally, although both programs provide teaching and practice with word sets, the Large Teaching Set program includes a game format which is unlike those in the Small Teaching Set program.

Method

Subjects and Setting

Eight learning disabled high school students, in grades 9 through 12 who were at least two years below grade level in reading and language arts, and who were identified as Learning disabled (Woodcock-Johnson, 1977) were eligible to participate in the study. These students attended a special education resource room for part or full day and were taught reading or language arts. All students were administered a multiple-choice, 50-item vocabulary test. They were then matched by pretest scores and randomly assigned to one of the two treatment groups. The Large Teaching Set program or the Large Teaching Set program. (Subjects scored over 106% on the pretest were excluded from the study). Two students decided not to participate. During the study, four days were dropped due to frequent absences, and one student was dropped when his performance indicated that his pretest score was inaccurate. Thus, a total of 25 students actually participated in the study.

Subjects were administered the Advanced 1 Reading subtest level of the Metropolitan Achievement Test (1978) after the conclusion of the study for descriptive purposes. Their mean performance corresponded to the 48 percentile, with a range between the 1st and 22nd percentiles.

The study was conducted in a large, special education resource classroom in a high school in the Eugene 4j School District in Eugene, Oregon. IBM computers and color monitors were set up in the back of the classroom, away from other instructional groups.

Materials

The Smal Teaching Set program (Carnine, Raskin & Granitz, 1984) consists of individualized CAI vocabulary lessons by first testing a student on new words (drill), teaching practice sets of only those words which the student does not know. An example of a teaching frame appears in Table 2.

The exercises in the practice set consist of three types of multiple-choice items: (1) the word word appearing alone with

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the correct definition as one of five choices, (2) the word appearing in a sentence with the correct definition as one of five choices, and (3) a synonym (or short definition) for the word appearing in a sentence with the word as one of five choices. Two levels of practice exercises appear in Table 2. For the practice exercises, the program picks from a pool of four items and randomly selects items to present. The student must get two items per word correct before the lesson ends, unless time runs out and the student selects the "escape" option to terminate the lesson.

In order to reach mastery criterion on a word and have it removed from the practice set, the student must identify the word's word meaning on two consecutive lessons or, in other words, four times in a row across two lessons. The word then becomes a "learned" word and moves from the practice set to the "review set." Once ten words have been "learned" and moved to the review set, the program provides a cumulative review test on the review set. Any word on this cumulative review test is put back in the practice set, and the student must again meet mastery criterion on the word.

The Large Teaching Set program (Davidson & Eckert, 1986) teaches words in sets of twenty-five. The program begins with ten words in each of the first four sets. However, for the purposes of this study, the same 50 words used in the Small Teaching Set program appeared in the Large Teaching Set program as two sets of 25 words (see "Word Selection" below).

Each time the program is run, the student goes through the same 25 words in the same order. Unlike the Small Set program, some of the words will be words the student already knows, since there is no initial randomization. At the beginning of the lesson, the program presents a menu with a choice of four formats: 
1. whole word
2. multiple choice quiz
3. sentence completion
4. arcade-type game

These activities include two word displays and multiple choice quizzes similar to the Small Teaching Set program and two that are quite different. Sentence completion involves spelling the new words, and the arcade activity involves playing a game similar to those in a video game format. For details, see Johnson (1985).

Feedback to Students

Both CAI programs provided immediate feedback to students on the accuracy of their responses. The verbal nature of positive feedback to students when they answered correctly was similar in the programs. In the Large Teaching Set program, when the student answered an item correctly, a message such as, "Nice going" or "Keep it up," (name), "appeared. When the student answered an item incorrectly in the Small Teaching Set program, the message "Yes, the correct answer is," appeared.

The arcade-type game provided a type of reinforcement to the students. The game was a variation of the Small Teaching Set program. When the student accurately "shot" the correct answer to a word, the word was highlighted, and a score for that shot appeared briefly in the middle of the screen. Accompanying sound effects were turned off, in order not to distract other students and teachers in the room.

Both programs also provided feedback on the number of words correct. The Large Teaching Set program did this by giving the student a percent correct score at the end of an activity and then displaying any words missed. The Small Teaching Set program listed words on which the student had yet to meet mastery ("Currently reviewing") and words mastered ("Already learned").

Selection of Words for the Study

The Large Teaching Set program provides words, definitions, and exercises for 25 nouns, 25 verbs, and 25 adjectives for each level. Prior to the study, a list of these 450 words was given to six middle school and high school special education teachers in the district in which the study was to be conducted. These teachers picked words from this list which they considered important and useful for mildly handicapped secondary special education students to know. An initial list was constructed of 107 words which were considered important by two or more special education teachers. A final list of 23 verbs and 22 adjectives was developed for use in the study. All of these words were from the words commonly covered in grades 7, 8, and 9.

The 450 words were entered and used in both the Small Teaching Set and Large Teaching Set programs. The same definitions were used in both the Small Teaching Set and Large Teaching Set programs. The authors did not always agree with the definitions or items that appeared in the Large Teaching Set program. For the purposes of the study, exercises written for use in the Small Teaching Set program were the same or very similar to items which appeared in the Large Teaching Set program. The differences between the effects of the programs, if any, were intended to be a function of instructional design features.

Table 1. A Teaching Frame from the Small Teaching Set Program.

| The word ESTABLISH means SET UP. |
| Susie will ESTABLISH a new procedure for our meetings. |
| Susie will SET UP a new procedure for our meetings. |
| The bank is going to SET UP a new branch on the other side of town. |
| The bank is going to ESTABLISH a new branch on the other side of town. |

Table 2. Two Practice Forms from the Small Teaching Set Program.

| The doctors are going to SET UP a new eye care clinic. |
| 1. employ |
| 2. attempt |
| 3. undertake |
| 4. cancel |
| 5. establish |

Procedures

Following pretesting (see Measures below), all subjects received computer-assisted vocabulary instruction during a 20-minute session each Monday through Thursday. Since the 40-minute periods were divided into two separate sessions, some students began the period with a computer session and then returned to their regular instructional group, while other subjects first attended their instructional group and then completed a session on the computer. Although students were randomly assigned to treatments, only students in the same treatment condition worked on the computer during any session to ensure that students were not able to observe the other treatment. The computers were spaced apart and the color monitors turned so that, as much as possible, students were unable to see the monitor screen of any other students in the same treatment. Care was taken that no students were using any other than that provided by the computer programs, took place during the study.

The experimental study was a doctoral student in Special Education at the University of Oregon. The experimenter was present for each session to ensure that the sessions lasted exactly 20 minutes, that students actively worked on the computer with minimal talking, that they completed as many lesson activities as possible during the 20 minutes, and that they took the optional reviews of missed words at the end of the "multiple choice quiz" exercises in the Large Teaching Set program. The experimenter also completed checklists on each student's daily progress.

No other management system was required for the students in the study. Although the special education resource room teacher told the students on the first day of the study that they could earn the same number of points while on the computer that they might earn in the instructional group, further mention of points was made during the study. Only occasionally did some students have to be reminded to press the keys, rather than pound on them, when the screen said, "Press ENTER." Another student had to be warned about talk-outs, and this was the student who was present for only seven sessions and after that was absent so often that he did not complete the study.

Familiarization with the computer and word-reading practices. During the first five minutes of the first session, the experimenter taught the students how to load the program disks and start up their programs. If any student was having trouble operating a computer. During the next five minutes of the first two sessions, the experimenter provided word-reading practice on words that were to appear in the program. The words were presented individually on two practice sheets, and students took turns reading columns out loud. If a student misread a word, the experimenter told the student the word and directed the student to repeat the word and read the sentence containing the word.

Eight students, four in each treatment, displayed differently in accurately decoding and pronouncing words during word-reading practice. These students each scored 40% correct or less on the pretest. Two additional 5-minute word-reading practice sessions were held, prior to sessions 3 and 4, for these students.

Mastery criterion for Large Teaching Set. The experimenter told the students in the Large Teaching Set program that their goal was to get a score of 84% correct (21 correct out of 25). They were told that if they scored 84% or higher, they could play the arcade-type game, and if they scored 84% or higher on two consecutive days, they would move on to a new activity.

On each day that the students scored 84% correct or more, the students completed the reviews and then spent the remainder of the session playing arcade games on the computer. The computer was used to determine the students' level of performance in reading and spelling and to provide them with a means of escaping to an arcade-type game. The computer was used to determine the students' level of performance in reading and spelling and to provide them with a means of escaping to an arcade-type game. The computer was used to determine the students' level of performance in reading and spelling and to provide them with a means of escaping to an arcade-type game. The computer was used to determine the students' level of performance in reading and spelling and to provide them with a means of escaping to an arcade-type game.
Denise enjoyed her back yard. In the fall, the yard was covered with leaves. Denise had procrastinated. Saturday was cool and crisp. Denise decided to rake the leaves. At first, her hand felt cold and stiff on the rake handle. Soon, she acclimated. She enjoyed the clear, sunny skies and the rustle of the leaves.

1. Denise raked the leaves in her yard
   a. before she was supposed to.
   b. just when she was supposed to.
   c. after she was supposed to.
   2. When Denise finished raking
   a. her hands were still stiff.
   b. her hands felt fine.
   c. her hands were hot.
3. Denise enjoyed the clear, sunny skies and
   a. the sound of the leaves.
   b. the fall colors.
   c. the smell of the leaves.

### Table 3.

Denise raked the leaves in her yard. In the fall, the yard was covered with leaves. Denise had procrastinated. Saturday was cool and crisp. Denise decided to rake the leaves. At first, her hand felt cold and stiff on the rake handle. Soon, she acclimated. She enjoyed the clear, sunny skies and the rustle of the leaves.

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   b. the fall colors.
   c. the smell of the leaves.

### Table 4. Number and Percentage of Students Reaching Mastery Criterion and Mean Number of Sessions to Mastery for Small Teaching Set and Large Teaching Set Samples

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Students Reaching Mastery within N Sessions</th>
<th>Percentage of Students Reaching Mastery within N Sessions</th>
<th>Mean Number of Sessions to Mastery SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Teaching</td>
<td>12</td>
<td>20</td>
<td>6.7</td>
</tr>
<tr>
<td>Large Teaching</td>
<td>12</td>
<td>20</td>
<td>6.7</td>
</tr>
</tbody>
</table>

### Table 5. Mean Score, Standard Deviation, and Mean Percent Correct on 50-item Pretest, Posttest, and Maintenance Test for Small Teaching Set and Large Teaching Set Samples

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest SD</th>
<th>Posttest SD</th>
<th>Maintenance SD</th>
<th>Pretest Mean Percent Correct</th>
<th>Posttest Mean Percent Correct</th>
<th>Maintenance Mean Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Teaching</td>
<td>12.47</td>
<td>12.47</td>
<td>12.47</td>
<td>84.0</td>
<td>84.0</td>
<td>84.0</td>
</tr>
<tr>
<td>Large Teaching</td>
<td>12.47</td>
<td>12.47</td>
<td>12.47</td>
<td>84.0</td>
<td>84.0</td>
<td>84.0</td>
</tr>
</tbody>
</table>

### Table 6. Comparison of Mildly Handicapped with Nonhandicapped Students: Multiple-Choice Test

<table>
<thead>
<tr>
<th>Group</th>
<th>Test</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Mean Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Teaching</td>
<td>Posttest</td>
<td>12</td>
<td>42.0</td>
<td>4.0</td>
<td>84.0</td>
</tr>
<tr>
<td>Large Teaching</td>
<td>Posttest</td>
<td>12</td>
<td>42.7</td>
<td>7.7</td>
<td>87.4</td>
</tr>
<tr>
<td>Nonhandicapped Comparison</td>
<td>Posttest</td>
<td>12</td>
<td>42.0</td>
<td>4.0</td>
<td>84.0</td>
</tr>
</tbody>
</table>

Results of the ANOVA indicated that there was no significant type of instruction: $F(1,22) = 0.33$. Results of the ANOVA demonstrated that there was a slight increase in performance between posttest and maintenance test for students in both groups: $F(1,22) = 4.94$, p < .05. Mean performance was close to a mastery level for both groups on both measures, 84 to 97% on the posttest and 81 to 84% on the maintenance test. Students in both programs learned as much, as measured by the criterion-referenced posttest and maintenance test, as much, as measured by the maintenance test.

### Comparison with Nonhandicapped Students

The 50-item multiple-choice test was administered to nonhandicapped students in a regular English class in order to compare the posttest performance of the mildly handicapped students to that of a nonhandicapped sample on the same measure. As Table 6 demonstrates, the posttest mean scores of the mildly handicapped students were slightly higher than the nonhandicapped students' mean scores. Students in all groups scored at close to mastery levels (range $= 80-97$%).

After a maximum of eleven sessions of computer-assisted vocabulary instruction, the performance of mildly handicapped subjects on the multiple-choice test was a very similar to that of nonhandicapped 10th-grade student who had received no instruction on the same words.

### Transfer Measures

Each student was administered an open-ended oral test on word meanings after session 7. A maximum of two points was awarded to each item, one for a correct definition and one for an appropriate sentence. Partial credit (one-half point) was given to responses which were correct, but incomplete. Results of a t-test on students' scores on this measure indicated that differences between groups were non-significant, $t(22) = .45$, p < .05. The mean was 6.4 for the Small Teaching Set group and 7.2 for the Large Teaching Set group; standard deviations were 4.7 and 4.4, respectively.

On the written comprehension test, differences between the two groups were again small and non-significant: $t(22) = .57$. The means were 1.4 and 2.1. Scores on the two transfer tests were approximately lower than those on the multiple-choice test, as expected.

### Attitude Survey

Results of the attitude survey indicated that, for the most part, students responded favorably toward computer-assisted instruction and the programs. Twenty-three of 24 students felt the

---

*The present test was not included in the ANOVA for the following reasons. The time between this posttest and the maintenance test was the same for all subjects (two weeks), but the time between pretest and posttest was not the same for different subjects. The repeated measures could not be used.*

**Continued on Page 7**
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6 DIRECT INSTRUCTION NEWS, SPRING, 1986
computer helped them learn new words, and one student indicated that "maybe" the computer helped.

In answer to the question, "Did you enjoy working on the computer?" students answered on a 4-point scale, with 1 being "not very much" and 5 being "very much." The mean scores were 3.4 for students in the Small Teaching Set program and 4.0 for those in the Large Teaching Set program. Results of a Mann-Whitney U Test indicate this difference was significant: U = 43.5, p < .01.

Nineteen students indicated they would like to learn more on a computer, and three students indicated that "maybe" they would. Two students, both in the Large Teaching Set program, indicated they did not like to learn more on a computer.

Discussion

The results of this comparison of two groups who learned vocabulary in a computer-assisted instruction with mildly handicapped high school students will be used to provide a basis for the comparison required to reach mastery criterion, (b) growth in word knowledge, (c) transfer of learning to authentic situations, and (d) student attitudes toward computer-assisted instruction.

Time-to-Mastery

In previous studies which attempted to improve students’ word knowledge through the direct teaching of word meanings, the effects of various instructional procedures were compared. These studies which demonstrated desirable gains did so at an expense of considerable instructional time. This study was the first to focus on efficiency as a dependent variable.

The one unequivocal finding of the study was that subjects taught with the Large Teaching Set program reached mastery criterion on the set of 50 words significantly faster than the students taught with the Large Teaching Set program. The difference in the number of sessions required to reach mastery by the two groups was statistically significant. Also, more students in the Small Teaching Set program reached mastery within the same number of sessions.

Given that the groups achieved equivalent levels of performance on the multiple-choice tests, their difference in acquisition rates became even more meaningful. Students taught with the Small Teaching Set program required less time to meet mastery criterion on the words, yet the percentage of correct responses was equal to that of students in the other treatment who took longer reaching mastery. In addition, there was no difference in their retention of word meanings.

The findings regarding the efficiency of the Small Teaching Set program may hold future import for teachers of low-performing or emotionally handicapped students. An efficient, computer-assisted method of vocabulary instruction could provide a basis for adding educational vocabulary, without placing further burdens on teachers’ time.

Growth in Word Knowledge

The growth in word knowledge evidenced by both groups provides encouraging support for the use of computer-assisted instruction in vocabulary with mildly handicapped students. Each group started with a pretest mean score of about 50%, after seven 20-minute sessions, each group’s mean score was around 80% (Johnson, 1988). Approximately one week after reaching the mastery criterion determined for their program, or after 12 to 14 sessions, students who did not reach mastery criterion, each group’s mean score was around 85%. These scores reflected a considerable acceptance minimum mastery level; approximately 85% correct. Finally, on the main-forces’ students’ administration, two weeks later, each group’s mean score was above 80%. Although the drop between pretest and maintenance test was statistically significant, 80% is still a high level, especially considering that students began at a 50% level.

Transfer of Learning

Students’ low scores on the two transfer tests could not be surpris- ing. Without specific training for transfer, mildly handicapped students may have difficulty in acquiring additional academic skills (Alley, Deisher, Clark, Schumaker, & Warner, 1983). Both the choice of words and the passage comprehension required to pass the multiple-choice requirements of the test was so transferable. Students scored 85% correct on the multiple-choice transfer test, they score approximately 35% on the oral test of word meanings and 50% on the comprehension test. Lack of specific training for transfer left the transfer measures was likely the primary criterion on the nature of the students. The implication is clear. Students need training in transfer of skills learned in CAI formats.

Student Attitudes toward Instruction

On the attitude survey, most students indicated they enjoyed computer-assisted instruction and the CAI pro- grams. When asked to indicate what they especially liked about using the computer, perhaps the most telling response was, "It helps keep your mind active when you work on it." Students’ positive response to computer- assisted instruction lends credibility to the claim of Rudolph G. Grash (1964) that advantages of CAI with special education students include increased retention, immediate feedback about performance, immediate reinforcement, and motivation.

On the question, "Did you enjoy working on the computer?" students rated the Small Teaching Set program significantly higher, as its results of a Mann-Whitney Test demonstrated. This finding is interesting as it relates to the design of CAI programs. While the Large Teaching Set program had an "arcade" type game, the Small Teaching Set was designed to foster rapid learning. During the study, some students in the Small Teaching Set program occasionally asked the experimenter why he didn’t get to play a game like the one in the other program. The experimenter wondered if this difference in programs might bias the students against the Small Teaching Set program. The results indicated, however, that the students in the Small Teaching Set program, which tailored lessons to their individual learning needs, rated that program more highly.

This finding is important for those designers of CAI programs who apparently believe that the computer can be a tool to make software to be motivating, it must approximate computer games which are popular in video arcades and in the home video market. Results of the attitude survey in this study do not support such reasoning.

Suggestions for Future Research

This study contrasted two packaged CAI programs. The major difference between the programs related to the size of the teaching and practice sets and the procedures for individualization and cumulative review. Yet other subtle differences between the software programs may have affected the outcomes. Since an effect for time to mastery was clearly demonstrated for the Small Teaching Set program, the posttest performance levels were equivalent for the two groups, future research might focus on only the Small Teaching Set program. By varying the size of teaching and practice sets, and by comparing different schedules for cumulative review exercises, more exact effects of these variables could be measured.

The programs taught 50 words contained in a 50-word set. Future research with the Small Teaching Set program could utilize a larger set of words and then better examine the effects of cumulative reviews.

A potential problem in the use of CAI in special education in the computer-presented text may be inappropriate for teaching students with reading disabilities (Hofmeister, 1982). In this study, eight students, four in each treatment, had difficulty reading the words during the two short word-reading practice sessions at the beginning of the study. These students scored below 40% correct on the pretest. Two additional 5-minute word-reading practice sessions were provided, but this limited amount of instruction did not overcome the difficulties these students had reading the words on their own. Since they did not meet mastery criterion in 11 sessions, yet their mean score on the posttest was 75% (SD = 8.0, range = 68-90). Only one student (who was taught with the Large Teaching Set program) showed no gains between pretest and posttest.

Although most learning disabled students did not profit from the CAI program, overall performance levels were very low on the transfer measures. These six students’ mean score on the oral test of word meanings was only 17.1% (SD = 15.3, range = 4-39). If disabled readers are to benefit from computer-assisted vocabulary instruction, future studies need to investigate effects of interaction between teacher-directed and computer-assisted instruction. This integration should improve students’ performance on oral tests of word meanings.

Summary

This study was unique in three respects. First, it was the only vocabulary study to investigate efficiency as a dependent variable. Secondly, research on the use of computer-assisted vocabulary instruction had been conducted previously. Finally, all past studies of CAI in special education were conducted with middle-grade, rather than high school students, and only one previous study had been done with special education students. This study is the first with high school students in a special education setting.

The efficient, computer-assisted vocabulary instruction with mildly handicapped students is clearly suggested in the gains made by subjects in the study. The difference in efficiency favoring the Small Teaching Set program may be due to: (a) the small teaching and practice set sizes, (b) individualized lessons based only on written subject does not know, and (c) cumulative reviews of words learned in the program. If future studies can document similar gains across larger sets of words over longer periods of time, the potential for this type of instruction may be viable. In the teaching and practice sets, and the procedures for individualization and cumulative review. Yet other subtle dif-
students work. This pattern of explanation followed by student written activities is repeated a number of times in each lesson. By presenting explanations with questions periodically within each lesson, they remain attentive. Independent work is done in shorter, more frequent segments to increase the amount of academic engaged time.

Review Procedure

In the basal program, a skill is introduced and practiced, but then "disappears" for several days. For example, Macmillan/McGraw-Hill's Today teaches multiplication of fractions in one lesson. In subsequent lessons, other skills are introduced, including multiplication of whole numbers and fractions, and multiplication of mixed numbers. However, in the next three lessons students work with word problems, reciprocals, and division, after which students are expected to perform the multiplication of fractions independently on review and test lessons.

In Mastering Fractions, the skill of multiplying fractions is introduced and then practiced on every subsequent lesson. Each new skill that is taught is reviewed cumulatively, or else incorporated into more complex skills.

Discrimination Practice

Students who learn to carry out certain steps again and again on the same type of problem may have difficulties when they encounter different problem types mixed together on a test. For example, a 14-day unit in the basal program introduces adding and subtracting fractions. In the next unit, students learn the strategies for multiplying and dividing fractions. No practice is given on discriminating between the strategies (e.g., multiplication and addition). In the review and test lessons, the problem types are still separated. Students never receive discrimination practice between strategies. After the two units, fraction operation does not appear again in the test for the remainder of the school year.

In Mastering Fractions, skill instruction is implemented, practiced, and within a few lessons mixed with other types of problems. For example, the lesson presentation specifically addresses the differences between addition and multiplication strategies. If students have difficulty making the discrimination, follow-up remediation is given, after which students are requested to work in a set of problems involving both operations. The skills are then integrated with other types of problems on every worksheet.

Darch, Carnine and Gesten (1984) compared the effectiveness of a regular basal mathematics curriculum with a curriculum program similar to Mastering Fractions in that it incorporated systematic discrimination practice. Students who received discrimination practice performed significantly better than students who did not on a criterion-referenced posttest. For example, the test, Engelkirk (1984) also emphasizes the importance of discrimination practice for mildly handicapped students, to avoid confusion between related concepts.

Example Selection—Range of Examples

In the basal program, when students first encounter pictures of fractions, all the fractions are mixed together and there is no level to which students remain attentive. In Mastering Fractions, mixed numbers are introduced as a whole number and a fraction, reinforcing the misconception that fractions can only represent quantities less than one. Improper fractions do not appear until the next grade level. A common error occurs when improper fractions are finally introduced; students represent these fractions as less than one; e.g., for \( \frac{2}{3} \), students write:

\[
\frac{2}{3} = \frac{1}{2}
\]

Mastering Fractions teaches students a strategy for reading and writing both proper and improper fractions from the beginning of the program:

1. The denominator tells the number of parts in each group:

\[
3
\]

2. The numerator tells the number of parts used or shaded:

\[
\frac{2}{3}
\]

The wide range of examples prevents students from forming misconceptions and gives students a more complete understanding of what a fraction represents.

In a carefully controlled experiment, Carnine (1980) demonstrated how a limited range of examples can cause students to form misconceptions. The instructional task was to write fractions of a hundred as decimals. One group of students was presented with a wide range of examples, with numerators of one, two or three digits (e.g., \( \frac{1}{100}, \frac{2}{100}, \frac{3}{100} \)). The other group was presented with a limited range of examples; all numerators comprised two digits (e.g., \( \frac{12}{100}, \frac{23}{100} \)). Carnine hypothesized that students in the limited range group would learn the misconception that the decimal point is always placed directly in front of the digits in the numerator (i.e., \( 4/100 = .4, 185/100 = .185 \)). His prediction that these students would not be able to generalize to other examples was verified. Students in the limited range groups scored 0% and 7% respectively on the problem types X/100 and XXX/100 on the immediate posttest. Students who had received the full range of examples scored 89% and 93% respectively.

Easily Confused Labels

When highly similar terms (e.g., the terms numerator and denominator) are introduced at the same time, there is an increased likelihood that students will become confused. In the basal program, the terms numerator and denominator were introduced together in the same lesson. In subsequent fraction examples, the teacher referred to the terms numerator and denominator, and the labels appeared on some worksheets, but no systematic teaching ensured that students could successfully apply the labels to the appropriate parts of a fraction.

In the Mastering Fractions program, the introduction of the terms numerator and denominator were separated by several lessons, so that students were facile with one label before the other, similar label was introduced. This procedure decreases the likelihood that students will become confused and makes reversals.

Explicit Strategy Teaching

In the basal program, students are not always given an explicit strategy to solve a problem. This could lead to student misunderstandings. Equivalent fractions serve as an example. In the first set of basal exercises, pictures of the two equivalent fractions, and three of the four fraction numbers are given; the students just count the number of shaded parts to complete the problem.

Students can write the fourth number and complete the equation without understanding anything about equivalent fractions. The teachers then have the students count the shaded parts and write the numerator. In the final set of exercises given that day, the pictures are removed.

\[
\frac{1}{3} - \frac{1}{6} = \frac{1}{2}
\]

The student workbook says, "You may draw a picture to help you." At least some students will not be sure how many parts to draw or shade; unless, of course, they know how to rewrite \( \frac{1}{2} \) as \( \frac{1}{3} \) or \( \frac{2}{6} \).

In Mastering Fractions, the strategy for equivalent fractions emphasizes this rule. When you multiply by one you do not change the value. When a fraction is multiplied by a fraction equal to one, the original fraction is equivalent to the new fraction (i.e.,

\[
\frac{1}{2} \times \frac{2}{2} = \frac{1}{2}
\]

\[
\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}
\]

so on.

With this conceptual basis for equivalent fractions, students are introduced to the strategy for figuring out the missing number, given a problem; e.g., \( \frac{1}{3} \times \frac{2}{6} \). Students identify the fraction of one they must multiply \( \frac{1}{3} \) by to end up with \( \frac{2}{6} \). \( \frac{1}{3} \times \frac{2}{2} = \frac{2}{6} \). The denominator of the fraction inside the parentheses is 3, so the fraction equal to one is \( \frac{2}{2} \). Therefore, \( \frac{1}{3} \times \frac{2}{2} = \frac{2}{6} \). Thus, the missing numerator is 4. Therefore: \( \frac{1}{3} \times \frac{4}{6} = \frac{2}{6} \).

Kameenui, Carnine, Dach, and Stein (in press) compared a basal approach to introducing fractions with a strategy-based approach similar to that found in the Mastering Fractions curriculum. For the explicit rule-based strategy group, the teacher demonstrated concepts and skills in a step-by-step fashion. Teacher guidance was gradually and systematically faded until students were performing independently. Correction procedures directed students to the explicit instruction they had received. In contrast, the basal approach was much less structured. Emphasis was placed on activities using student discussion and the use of manipulatives. Students in the explicit strategy group performed significantly higher on a criterion-referenced posttest and on a transfer test of related fraction skills.

The Videodisc Technology

Videodisc technology has great potential as an instructional medium (Hofmeister, Englemann, & Carnine, in press). One side of a videodisc contains 360 high speed optical frames. The frames can be shown in rapid succession to create motion sequence or display an object using a single frame for any period of time. Moreover, a teacher using a videodisc program has almost instantaneous access to the material on the disc.

Using a remote control pad (very similar to the remote control for a TV) the teacher can access anywhere on the disc in a matter of seconds. Automatic stops can also be built into the disc; the program can then freeze on any predetermined frame allowing the students to work problems or the teacher to elaborate on a concept.

The Mastering Fractions program takes advantage of the videodisc medium to demonstrate concepts clearly. For example, when equivalent fractions are taught, a fraction is put on a balance beam. The side with a fraction tips down. When an equivalent fraction is placed on the other end, the beam becomes level. The video sequence shows what equality means in a vivid, meaningful way by fulfilling many of the sound effects, highlights and other techniques also help maintain student attention.

The capabilities of the videodisc can do more than create compelling motion pictures. The videodisc can also assist the teacher in diagnosing and remedying student errors. Quizzes and tests on the disc help the teacher diagnose students as having difficulty with a particular skill area. Following each quiz, ad-dresses (numbers) are displayed on the screen for the tests tested. The teacher enters the address for the segment that is needed, providing immediate remediation, through demonstrations and extra practice problems.

Method

A study was conducted to determine whether the instructional features incorporated into Mastering Fractions would have a significant effect on stu-
Videodisc Fractions

Procedures

The teachers were the experimenters and a research assistant from the University of Oregon. Each teacher taught one condition of the study, then changed conditions for the remainder of the study.

Monitoring implementation. The teachers were observed on 4 occasions to assess the level of implementation in each classroom. Teachers received specific feedback on their performance, using the Implementation Checklist (discussed under Measures). Throughout the study, the teachers discussed any problems associated with the implementation of the two approaches.

Observers. Two trained observers recorded time on task and percent correct responses in independent worksheets, on 3 or 4 occasions for each student over the 2 week period. The experimental data, the observers practiced using the instruments until interobserver reliability exceeded 85 percent.

Administration of measures. Criterion-referenced tests were administered to all students participating in the study immediately following the completion of the baseline and the two weeks after completion of the maintenance test.

Results

The primary dependent variable was student performance on the 12-item criterion-referenced tests (post and maintenance). A 2 x 3 analysis of variance was performed on the CRT scores. The between-subjects factor was the instructional method (videodisc versus basal text); the within-subjects (repeated) factor was the time of test (post and maintenance). Significant effects were found for the instructional method (F = 17.28, p < .001) and for time of test (F = 46.91, p < .001). There was no significant interaction. Thus, the effect was maintained over a 2-week period. Figure 1 shows the mean scores for each condition on the post and maintenance tests. The IV group scored at a clear mastery level and was above the IV group in both conditions.

Levels of expertise were extremely high. No exceptions. 93% of the possible implementation behaviors were observed in the BT condition, and 94% in the IV condition.

Responses to the student questionnaires were summarized and assigned a score ranging from 1 to 10 (positive responses) or 0 (all positive responses) for the students’ perception of: (a) their
### Videodisc Fractions

Continued from Page 9

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**Table 2. Mean Responses on Pre and Post Attitude Measures of Perceived Competence in, and Relevance of Fractions**

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*Scores range from -1 (very negative) to +1 (very positive).

**Discussion**

The results of this experiment suggest that the different methods of instruction produce different levels of student mastery of the content covered. The students receiving videodisc instruction scored significantly higher both on the criterion-referenced posttest and on the maintenance test. The videodisc scores were dropped less dramatically over time—a non-significant drop of .1% compared to a drop of 7% for the basal test students.

While a significant difference was found between the two conditions for students' on-task behaviors, it should be noted that levels of on-task were high in both conditions. Students receiving the basal lessons were well motivated and actively involved during the lesson. This would imply that the quality of the IV curriculum—not merely the teaching procedures used in the study—was largely responsible for the differences in student performance.

Patterns of student errors also confirm the importance of the specific differences between the programs. For example, a large proportion (75%) of students in the basal treatment made errors when asked to write the fraction for a diagram representing a fraction greater than one. Given the diagram

![Diagram of fractions]

56% of the basal students wrote \( \frac{1}{2} \) even though all students could correctly identify \( \frac{1}{2} \) as \( \frac{1}{2} \).

The inability of 75% of the basal text students to extrapolate to fractions greater than one is a predictable consequence of all examples being less than or equal to one during the treatment intervention. In contrast, only 8% of the videodisc students, who had been exposed to fractions greater than one, exhibited this error on the post test. This parallels the results of the Carnine study (1980) cited earlier.

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**Advantages and Disadvantages of the Videodisc Medium**

There are other important advantages resulting from using the videodisc medium in the classroom, apart from the instructional capabilities already discussed. First, the videodisc presentation frees the teacher from demonstrating at the front of the classroom, and enables the teacher to move among the students and monitor their performance.

Second, a well-designed videodisc program can improve the quality of instruction provided by less confident (e.g., remedially) teachers. Not only does the videodisc program provide clear initial demonstrations, but it also provides frequent checks on student performance which can help the teacher diagnose student errors and select appropriate remediation procedures.

Third, the discs are highly durable. Surface scratches do not hinder the video or sound quality when the disc is played. The quality of the disc does not deteriorate over time. The durability of the disc and long lasting quality of the audio and video result from the laser technology. The laser beam reads the grooves that lie below a heavy coating of plastic.

The most obvious disadvantage of the videodisc medium—as with any new technology—is the cost. However, the cost of hardware has already dropped substantially. Also, presenting videodisc lessons to groups of students makes the technology more affordable. The combined cost of the hardware and software for a program such as Mastering Fractions is about the same as two Apple microcomputers and one or two inexpensive math software programs. If the videodisc is used 5 periods each day with classes of 20 students, 100 students are served each day. In contrast, 2 microcomputers used for 5 periods each day serve only 10 students.

The capability of the videodisc medium to incorporate state of the art instructional design features, together with its cost-effectiveness, provides it with great potential as a powerful instructional tool.

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**References**


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document and analyze their day-to-day impact on teachers (and instructional aides). We were less interested in studying schools attempting to become more effective, because we thought this was a subject whose study had been too effective (and ineffective) instructional management. The site that agreed to participate had at least one consulting teacher for each elementary school with a high proportion of low income, minority students. The sole purpose of the consulting teachers was to assist in the implementation of the Instructional program.

The schools operated two distinct academic programs—All Schools (new program of DI) and Direct Instruction (DI). ASAP is a district-developed program based on principles of mastery learning and the research on time-on-task and time allocation. Teachers use basal reading and mathematics texts and a series of extended semi-scripted teachers guides, developed by the district, in teaching the lessons. The guides highlight skills and the order in which they are taught. Additional worksheets were developed to provide practice on these skills. There are also ASAP and DI teachers in the bilingual programs. Students are tested at the end of each unit (approximately once a week) and the passage of the unit test is given a one-day pretesting lesson. Other students are pretested so the district can determine their teachers' rate of progress through the curriculum and the readiness of students to move to the day to basic academic skills are monitored.

If ASAP can be considered a structured approach to teaching, Direct Instruction (DI) must be considered highly structured. In DI classrooms, teacher performance is monitored not only in terms of rate of progress through the curriculum and student performance on unit tests, but also for the extent to which teachers are using the teaching procedures specified in the curriculum. As a result, the more in-depth diagnostic feedback teachers receive from the computer to improve their instruction, the more dependent the teacher becomes on the computer.
behavior. They were told they must respect each teacher's individual teaching strategies and style. Occasionally, however, a teacher may have only apparent "strategy" going over the homework and statework in rounds in the classroom, marking the next day's assignment. Several failed to take time to review or clarify matters with the students. Some consulting teachers were extremely frustrated by the situation. Sometimes, they occasionally tried to "assist" the principal in working with the few truly weak or disinterested students. Often, though not always, these efforts ended in limbo due to the principal's failure to follow through with questions made by the consulting teacher.

Another reason for this phenomenon was given by the office. When asked why the DI resource teachers gave specific, detailed, and seemingly erratic behavior in this model, the ASAP resource teachers did not, we were told that: giving such feedback would be perceived as the teachers "keeping score" and it would make teacher feel "uncomfortable". Because the district wanted to make the new program (ASAP) work, the teachers were advised, in the beginning stages of implementation, to not give any specific feedback.

The problem of close supervision is uniquely unique to this district or state. When supervision is not close, the efforts are undertaken, this situation is likely to recur. Lottie (1975) and Weick (1979) described the norms of teacher autonomy and equality prevalent in American schools. In a study of resource consultants working with special education students mainstreamed in regular classroom, Mostow (1984) concluded: "The job of the resource consultant centers on coordination, collaboration, and consultation. Yet the established norms of autonomy and equality of teachers pose a serious barrier to this role." Weick (1979) described schools as "Loosely structured organizations characterized by multiple goals." Although loose coupling between means and ends is less true (or an ASAP/DI school, for that matter), much of Weick's analysis still held true. The result was a hampering of the performance of the consultant teachers.

In our observations, we saw the organizational constraints of the participants. We found that it caused the consultation in several of the consulting teachers, who felt limited to the role of material suppliers of activity and instructional aids and subs. A few supplemented these duties by developing innovative strategies for accelerating student growth. Yet, there were definite limits to what they did and could do—professionally.

We became most aware of this clash when interviewing one of the teachers, actually one of the most motivated teachers we observed. We asked her to describe the type of feedback and technical assistance she received from the consulting teacher. She indicated that years ago she had received a few pointers in teaching the new ASAP math program. "But," she said, "why should anyone give me advice on teaching reading? I've been teaching reading for over 10 years. I know what I don't know." While this attitude may have made sense in her case, the teachers who had been in the classroom observed could have used feedback on methods to enhance their teaching.

The concept of consulting teachers is extremely challenging teaching assignments—a large number of students enter the school with limited language backgrounds in both the English and Spanish languages. These teachers were in need of knowledge on current research on effective practices, and help in how to transform this knowledge into practice, not because they were weak but because they had no way to apply the present day techniques of effective methods they were trained in didn't necessarily work with "at risk" students.

"Another Country"

Within several weeks, we became aware that more than organizational unit matter tests, some teachers the consulting teachers. After reviewing our field notes, including the formal interviews and informal discussions based on the classroom observations conducted with them throughout the year, an image began to emerge of the teachers themselves as felt as we were, in James Baldwin's phrase, in another country. Not once but several times, the teachers' awareness of the concepts in any of the classic articles on teacher effectiveness, such as Barak and Gourary's (1983) synthesis of "Teaching in the Instructional Programs" (1983) or Jane Bayley's "Beading Time on Task" (1980) or the recent Gourary and Good (1984) synthesis of research on effective teaching of basic academic skills. As it was if an invisible barrier existed, and these ideas never crossed the threshold of these schools. Granted, IP service was given to the class of effective teachers and administrative aspects of research on effective teaching—time on task, time allocation, pacing through the curriculum. And some real strides had been made in the concept of mastery learning. Throughout the four schools, there was a sense that if a child failed a test, the test was "wrong" (other than merely go on to the next lesson). However, we rarely heard of the child's success in the next lesson. We asked the consulting teachers from the consulting teachers in retouching the lessons.

By and large, though, none of the subtle findings on effective teachers, and consulting teachers. We observed the same looking for knowledge. In one school, a meeting in the consultation team was held because the kindergartener was responsible for bilingual and limited-English-proficient students. Yet, the consulting teacher was not present to watch. We observed the same language in the second grade, we observed the same language in the second grade at the meeting for knowledge. For example, in one school a meeting meeting for the consultation team was held because the kindergartener was responsible for bilingual and limited-English-proficient students. Yet, the consulting teacher was not present to watch. We observed the same language in the second grade, we observed the same language in the second grade at the meeting for knowledge.

The last decade has provided some solid research on teaching procedures that enhance the achievement of low come "at risk" students as these. We came to see that the consulting teachers needed extensive training in understanding these concepts and how they are applied in the classroom. Many of these concepts are not intuitively obvious. For example, one concept that good teaching challenges their students, yet research now shows low-performance students benefit from 90 percent or higher success rate. Similarly, the natural human tendency is to make children feel important rather than praise the four or five with their eyes on the teacher. As we observed, we became convinced that understanding and implementing these concepts could dramatically raise achievement (Stallings 1980, Anderson et al, 1979, Beck 1972). Extensive training, however, would be necessary. In the next section, we describe some elements essential to that training.

As we observed the consulting teachers in action, we were constantly struck by the type of questions they did not ask, the observations and analyses they did not make. For example, in analyzing an observed lesson, we would almost automatically ask ourselves questions such as:

1. Is the teacher modeling the strategy or process for the student?
2. Are adequate range of examples presented of the new concept?
3. Does the teacher check for understanding, i.e., if I understand do you have the new concept? If not, do you have the next segment of the lesson?
4. Does the teacher immediately correct the teacher? What is the cause of another student? If errors are on complex problems, does the teacher merely give the correct answer or guide the student through the correct strategy?
5. What is the overall student success rate during the lesson? Is it at the 85-90 percent level research suggests is most successful?

In analyzing the notes written by the consulting teachers in the ASAP program, and our conversations with the consulting teachers, we found that questions were virtually never asked. Sadly, this lack of knowledge on research of principles of effective instruction was not limited to the consulting teachers. Rather, it appeared to be a shared, schoolwide phenomenon. During the first week we attended instructional team meetings. We observed that the consulting teachers, and the special education teachers and remedial reading facilitators (in the schools in which such meetings, we observed the same language for knowledge. In one school a meeting meeting for the consultation team was held because the kindergartener was responsible for bilingual and limited-English-proficient students. Yet, the consulting teacher was not present to watch. We observed the same language in the second grade, we observed the same language in the second grade at the meeting for knowledge. For example, in one school a meeting meeting for the consultation team was held because the kindergartener was responsible for bilingual and limited-English-proficient students. Yet, the consulting teacher was not present to watch. We observed the same language in the second grade, we observed the same language in the second grade at the meeting for knowledge. For example, in one school a meeting meeting for the consultation team was held because the kindergartener was responsible for bilingual and limited-English-proficient students. Yet, the consulting teacher was not present to watch. We observed the same language in the second grade, we observed the same language in the second grade at the meeting for knowledge.

When we questioned whether the feedback was perceived as critical, many indicated that there were several reasons why it was seen as so. One teacher indicated that the two consulting teachers she had worked with in the DI program "were not good teachers, did not give me specific feedback on my performance and me." The second teacher was not used to providing feedback, and so could not give meaningful feedback. Yet, the consulting teacher was not present to watch. We observed the same language in the second grade, we observed the same language in the second grade at the meeting for knowledge. For example, in one school a meeting meeting for the consultation team was held because the kindergartener was responsible for bilingual and limited-English-proficient students. Yet, the consulting teacher was not present to watch. We observed the same language in the second grade, we observed the same language in the second grade at the meeting for knowledge.

Phase feedback/suggestions to teachers. When asked if she thought of enhancing student performance (e.g., instead of saying, "Spend more time on the phonics skills section of the lesson," they might say, "If you spend more time on the phonics skills section of the lesson, and check that all students know these skills, story reading will improve.")

When asked if the feedback to teachers in small, manageable units, normally focusing on only one area per observation. These principles may seem banal, but they were effective in working cooperatively with teachers and changing specific teaching behaviors.
Instructional Leadership

Continued from Page 12

The question remains—how did the two different models end up in the same schools in the same district with the same teachers' union? Probably the major factor in DI began as a small-scale, externally-funded program, and, because of the external funding, was something the district itself never had to develop or finance. Another reason cited was that DI was initially so different a way of teaching that many teachers didn't mind receiving "help." We were told that with a model like ASAP, which is much closer to traditional teaching from a basal reader, teachers were more likely to resist directive "help." Yet ASAP, when properly implemented, did demand quite a bit of change on the teacher's part.

Probably the major reason the DI model worked was the amount of training and the quality of training given to the consulting teachers. By this point in time, many of the consulting teachers were experts capable of providing specific remedies to instructional problems. Each consulting teacher had served an apprenticeship, working with a professional who had a contract to consult with a teacher or an outside consultant to learn how to supervise, how to analyze an instructional situation and how to communicate to teachers. Initially, the new consulting teacher watched the senior person work and discussed what the new teacher saw. At times, the two discussed their observations and analyses, and the senior person indicated why she would do what she did on this work or in this situation. ASAP, the new consulting teacher was on their own experience; the anime training they received focused on the ASAP procedures. And, as we saw, much of their involvement with teachers was on procedural issues. It was only with aides, or inexperienced teachers, that they felt comfortable providing actual technical assistance.

We don't want to conclude this section by giving the impression that all was well with the DI program. By and large, the teachers found this intensive type of inservice supervision most helpful the first year or two when they were new to DI. It was not clear that the model of helping them during the third or fourth year, as some were struggling with more sophisticated issues, such as how to distinguish the progressiveness of writing or oral language. More could have been done with peer support, in-depth observations of fellow teachers, even using experienced teachers to coach new teachers or aides.

These concerns, though, are relatively minor. The DI model did meet the need voiced by 67 percent of the ASAP teachers of providing some type of specific feedback on how to enhance their work. In addition, the model did reach and address many of the concerns raised in the research on effective teaching.

The conclusion we reached was that without the training offered to the consulting teachers in the DI program, the model would not have worked. This type of training is fairly unusual in school districts and, on the surface, rather expensive. The clear window that the consultant teacher (Showers, 1980) is used in two ways. First, peer coaching as a means of improving the teaching effectiveness of the teacher. Second, the more effective DI consulting teachers used coaching as one of their primary means of working with teachers. If they observed a problem, they took over the group for a few minutes to demonstrate a solution. They talked with the teacher about what they were doing and why, and then asked the teacher to practice the new skill. They called the teacher the student. A technique sometimes used in ASAP. Here, the consulting teacher would occasionally teach a full 30 minute lesson (as opposed to a 3-4 minutes segment). Model lessons tended to always be one-shot affairs. In the interviews, the new teachers indicated that these lessons were useful, they showed how all the pieces fit. But a full 40 percent of the experienced teachers indicated the model lessons were not useful. In the words of one teacher, "She did the lesson just like I had been doing it, right out of the Scott Foresman teacher guides... I learned nothing new.

Conclusions

On the basis of this study, one could conclude that, by and large, procedures of instructional management practices that are either unclear, ill-defined, or ill-defined, or very subtle, tend not to be implemented. This can be viewed as either a source of pessimism or of optimism. The reasons for pessimism are obvious. By large, the ASAP consulting teachers had only implemented the "lower order" instructional leadership functions. They all checked that the required charts were up-to-date; most checked if a teacher's rate of progress through the curriculum was slower than that recommended by the district or if a teacher was deviating from the recommended time allocation.

Many observed to see if teachers were following the ASAP teachers guides, and discussed major discrepancies with the teacher. On the other hand, rarely was time spent in any of the more subtle areas of instruction-ways to enhance stronger performance of fellow teachers, correcting errors, providing clearer model of new concepts to students. Good and Gatto (1979) have identified the study of staff development in mathematics, is there any hope, then for the training and development of individuals who can serve as effective instructional leaders- or at least managers-who can help teachers improve their performance to meet the needs of low-performing or "at risk" students?

The answer, and the source of optimism, lies in the initial observation-what is clear from the research is that there is a need for professional development. Our findings lead us to believe that if consulting teachers were shown specific models of teaching lessons, and learned the principles behind these lessons, and were sanctioned by working with teachers in this area, the majority of the consulting teaching would work with teachers on teaching lessons. Certainly more than the 2 percent we found. Similarly, if the consultant teachers were taught more about specific corrective feedback, they would begin to look at teaching situations in this light and begin to provide teachers with useful feedback. The observations of the DI consulting teachers would support this view. By and large, DI consultants are in the fashion in which they were trained. With this approach, and as with any other, some were more sensitive, skilled, more communicative than others. But the basic model they operated under was more detailed, more exhaustive, more attentive to research findings, as well as more ambitious. This model did not assume everything was okay, but rather that there were areas where specific feedback from a skilled professional could enhance the teacher's professional skill in teaching the students.

The tacit basis of ASAP was that teachers are the instructional experts or that so little is really known about teaching that there's little a consulting teacher can communicate. Phrases like accommodation to teaching styles and teaching strategies are used. When the consulting teachers did offer teachers feedback, they often based it on their own experience and on what teachers believed while this was useful to the novice teacher, it failed to meet the needs of some of the others. The belief that teachers' education stops when they receive their credential, that they know everything they need to know, teaching students 3 years below grade level, that they know of research generated 15 years after they received their training, is absurd.

In large part, the district was selected for the study because it had made the commitment to hire consulting teachers to assist and manage the implementation of ASAP and DI. Despite the limitations we observed, we felt this was a wise decision. In each of the schools studied, we saw that the principal was not the appropriate person for the task. The emotional support, material support, and the monitoring functions supplied by the consulting teachers were crucial to the success of the two models.

Teachers rated the helpfulness (in their day-to-day teaching activities) of the consulting teachers higher than that of fellow teachers or the principal. Additionally, teachers were asked who they sought help from when they had questions about instruction. Eighty-five percent indicated they would ask the consulting teacher first. This indicated to us the potential power of the consulting teacher in school improvement efforts even though we did not see their potential充分发挥 in all the schools.

In all schools, there was strong evidence that the overwhelming majority of the teachers support the ASAP (91 percent) and DI (95 percent) programs and see real benefits in these programs. The bulk of the teachers appear to find the...
The Association for Direct Instruction announces the 12th Annual Eugene Direct Instruction Training & Information Conference

PLACE: Eugene Hilton Hotel & Conference Center
DATES & TIMES: August 4-8, 1986 8:30 am-4:00pm daily
FOR: Teachers, of Regular and Special Education, Supervisors, Administrators, and Aides of all grade levels
FEE: $125.00 for the 5-day Conference

The Association for Direct Instruction is pleased to announce the 12th Annual Eugene Direct Instruction Training and Information Conference. The conference will be held at the Eugene Hilton Hotel and Conference Center, in downtown Eugene. We hope that you are able to make the Conference the highlight of your summer and join with other professionals in furthering your skills and knowledge of instructional technologies. There is a full range of sessions designed for teachers, aides, supervisors, and administrators whose goal is to promote educational excellence in all facets of education. Previous participants will find new course offerings in a number of areas of interest.

After a day of work, participants will enjoy evenings in Eugene. Next door to the Hilton is the Hilt Center for the Performing Arts, a world class performance hall. Within blocks of the conference site are scores of restaurants catering to a variety of tastes. Eugene's setting will make the conference a rewarding professional experience as well as a relaxing vacation for you and your family. To help reawaken old friendships or make new acquaintances, a picnic has been planned for Monday afternoon. A feature added to the conference this year is 2 no-host social hours. On Tuesday and Wednesday evening trainers will be available to answer questions and provide an opportunity for making new contacts.

SESSIONS

A Teaching the Beginning Reader
B Reading Mastery III, IV, V, VI
A Teaching Reading Accuracy & Fluency
A Reading Programs: Selecting, Transitioning to, & Adapting
A Teacher Training: Teaching Others to Teach DI Programs
A Solutions to Classroom Management in K-6
A Generalized Compliance Training
A Computer Coursesware: A Direct Instruction Perspective
A Overview of Direct Instruction Research and Theory
A Diagnosis, Corrections and Firing
B Teaching the Beginning Reader
B Reading Mastery III, IV, V, VI
B Advanced & Corrective Arithmetic
B Teaching Oral & Written Comprehension Skills
B DISTAR Arithmetic I & II
B Effective Spelling Instruction
B Overview of All Direct Instruction Programs
B Solutions to Secondary Classroom Management
B Direct Instruction for the Severely Handicapped Learner
B Video Disch Instruction in Math
B Classroom Technology and Direct Instruction
C Effective Spelling Instruction
C Reading Mastery II and Fast-Cycle I & II
C Teaching Beginning Language Skills
C Teaching Flicks and Facts Systems in the Content Areas
C Teaching Academic Survival Skills-Study Skills
C Managing Students with Emotional Problems
C Direct Instruction Approach to Teaching Secondary Science
C Overview of Direct Instruction Theory
C Supplemental & Transitional Activities Related to DISTAR
B Becoming a Nation of Readers: Issues & Implications
D Overview of Classroom Technology and Direct Instruction
D Teaching Expressive Writing Skills
D Overall Aspects of Supervision & Monitoring of DI
D Direct Instruction & Mainstreaming
D Teach Your Child to Read in 100 Easy Lessons
D Overview of Direct Instruction Research

Conference Session & Events Schedule

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There are 34 sessions offered during the 5-day conference. Participants may attend up to 4. Sessions are either training or informational sessions. The focus of training sessions is on specific teaching behaviors. Test practice is involved in each of these sessions. The goal of informational sessions is to provide the kind of detailed information needed to implement successful techniques or understand the topic.

The sessions are scheduled in 4 time periods. Each participant will choose one "A" session, one "B" session and either one "C" session or one "D" session and one "E" session.

Instructional Leadership

Continued from Page 13

structure generally helpful to them and to their students. This was especially true for newer teachers.

The principles on which ASAP and DI are based-teaching to mastery, immediate remediation of student learning problems, active teaching, structured teaching of basic academic skills, and rapid movement through the curriculum-continue to make sense to the large majority of teachers.

One of the most impressive effects of ASAP and DI is quite subtle and a bit difficult to describe. Essentially, we found the overall level of discourse-among teachers and resource teachers, among teachers and in Pavlovian traditions, and among teachers themselves-to be more focused and professional than is typically found in elementary school. Teachers speak about student problems in terms of the specific skill areas that students need most; they (e.g., operations with mixed fractions) rather than referring to students by global labels such as "slow learner." This is not to say that teachers never talk about non-academic issues, but that specific teaching problems and issues are consistently raised. This specificity is, in our view, a cornerstone of school improvement (as the work of Ron Edmonds and Judith Little and other have shown).

References


Edwards, R. Effective schools for the Urban poor. Educational Leadership, October 1979, 26-35.


Standardized Screening of Behavior Disordered (SSBD) Pupils in the Elementary Range

by Hill M. Walker
Herb Severson
Vernon Martin
Greg Williams
University of Oregon
Oregon Research Institute
University of Washington
Pacific Lutheran University

Children with severe behavior disorders (SBD) are consistently ranked by school professionals as representing one of the highest service priorities among all the handicapping conditions served by the public school system. However, the current screening and identification procedures for this population are frequently regarded as deficient by local educational agencies, state departments of education, and federal agencies in the area of special education (Grosenick, 1981; Grosenick & Huntze, 1980; Haring, Jewell, Lehning, Morrell, & White, 1984; Noel, 1982).

Barriers to effective screening—identification and service delivery efforts for the school-age SBD population include the following: (a) an inadequate conceptualization of behavior disorders among school-age children, (b) a failure to distinguish between behavior disorders and discipline issues in program practices, (c) a federal definition of severe emotional disturbance that has limited content validity and even less practical utility in providing a foundation for accommodating the needs of this population, (d) philosophical conflicts over effective approaches and appropriate outcome measures, and (e) territorial conflicts among different professions regarding responsibility for the problems presented by the SBD student. This listing is by no means exhaustive or exhaustive; however, it does partially explain why the school-age population is, at once, both inadequately served and substantially underserved by school systems.

Walker, Reavis, Rhode, and Jensen (1988) have noted that school-based action procedures targeted for the SBD child are characterized by a focus on control and containment, rather than on treatment, remediation, or prevention. For example, over 75% of SBD pupils are currently served in self-contained classrooms or in more restrictive settings (Grosenick & Huntze, 1980; Noel, 1982). In a national survey of LEA program practices for the SBD population, Grosenick and Huntze (1980) found that all of children receiving homebound instruction, 41% were behaviorally disordered, even though SBD students comprise an extremely small portion of the total handicapped population identified and served by schools.

The range of program options normally available to children with severe behavior disorders includes: (a) self-contained classrooms, (b) special schools, (c) out-of-district placements, (d) residential placements, (e) consultant teachers, and (f) homebound instruction. The great majority of students who are referred by teachers and subsequently placed in such settings are those with conduct disorders whose behavioral characteristics are: (1) externalizing in nature, i.e., directed toward the social environment, and (2) extremely aversive to teachers and peers (Achenbach, 1979; Ross, 1980; Walker, Hops, & Greenwo, 1984).

Except in rare instances, school-age children are not systematically screened for behavior disorders that can powerfully affect their school success, long-term adjustment and social development. As with many other handicapping conditions that directly affect and impinge on the schooling process, referral by the classroom teacher often represents the only avenue such children have to diagnosis, evaluation, placement, and, ultimately, access to existing therapeutic services. Research by Ysselsteyn and his colleagues (Ysselsteyn, Algozzine, & Epps, 1982; Ysselsteyn, Algozzine, Richley, & Grade, 1982) indicates that school psychologists and child study teams administer tests and collect data to essentially confirm or certify the validity of the teacher's referral. In the great majority of cases, the referral is certified—when even data gathered by the child study team do not support the decision to certify the student as handicapped (see Ysselsteyn et al. above).

It is apparent that the classroom teacher is a very important link between behavior disordered children, and programs and services that could be of significant value in mainstreaming their problems. At present, school systems have very little control over who gets referred and evaluated for possible services. Analyses of existing school practices indicate that children whose behavior is aversive to teachers and peers (noncompliant, aggressive, defy teacher) and/or disruptive of classroom atmosphere (tantrum, disturb others, steal) are those with the highest probability of referral (Grosenick, 1981; Noel, 1982; Walker et al., in press). This probability may vary considerably as a function of the teacher's tolerance level, behavioral standards and perceptual limitations of the effectiveness of existing school services for coping with the problem. (See Grosenick, Ysselsteyn, & Walker, 1983; Walker & Rankin, 1983.)

Research evidence on both current and hierarchical school referral practices (Gerber & Semmel, 1984; Haring et al., 1985) indicates that the great majority of behavioral referrals involve externalizing behavior problems, i.e., behavioral excesses (aggressiveness, conduct disorders, hyperactivity) that are directed outwardly toward the external social environment. Behavior disorders of this type are highly aversive to school personnel, difficult to manage, and are usually consecrated via control, containment, or punishment strategies.

Child behavior problems of an internalizing nature that represent problems with self, e.g., depression, phobias, disturbed peer relations, and social withdrawal/isolation, are far less salient and aversive for most teachers. Such problems, therefore, tend to be "screened out" rather than "teacher-owned" (Brophy & Rojekemper, 1982) and teachers are much less likely to assume responsibility for them or to refer pupils manifesting them to existing services. However, studies indicate that children with behavior disorders of this type are severely at risk for a range of developmental, emotional, and educational problems (Hops, 1983; Robbins, 1986). There is increasing evidence that social withdrawal and depression are the major presenting problem(s) in a significant number of children referred for psychological treatment (Reynolds, 1984; Strain, Cooke, & Appoloni, 1986). Recently published meta analyses of studies predicting academic failure indicate that internalizing behavior problems are a powerful predictor of achievement difficulties.

Teacher referrals of behavior disordered pupils are highly idiosyncratic and varied based upon subjective, teacher-generated criteria. Thus, referral and access to needed behavioral services by individual pupils are not mediated by objective criteria and standardized procedures that have some generalizability across teachers. As a result, teachers become more and more generalized in their knowledge of which pupils do and do not access existing services via the referral process. To get referred, a pupil's behavior usually has to be either highly aversive to the teacher and/or the pupil is perceived as consuming too large a share of the teacher's time and expertise in the management of the classroom.

The authors have designed a three-stage, standardized, screening and identification procedure that addresses many of the problems and issues discussed above in serving the SBD school population in the elementary age range. A major goal of the procedure is the systematic and mass screening-identification of pupils who are
proportion referrals to special education and IEPs may ultimately be labeled as behavioral disorder. It is intended that use of the procedures will give an equal chance for all children to be identified for externalizing and internalizing behavior problems.

This article provides an overview of the system, rationale for its use, and data on the development and preliminary testing of the instruments comprising the three screening stages. The authors were recently awarded a three-year, field-initiated research grant from the Office of Special Education and Rehabilitation Services to develop, test, and implement a copy of the Standardized Screening of Behavior Disorders instruments (SSBD) can be obtained from the senior author for the cost of reproduction and mailing.

Overview

The screening-identification procedure described herein consists of three separate, but interrelated, stages and is known as a multiple "gating" screening device (Loebel, Dishion & Patterson, 1984; Walker, Hops & Greenwood, 1981) in that it contains a series of progressively more expensive and precise assessments, i.e . gates . The first gate, or as stage one, simply involves surveying all elementary and middle school students present at risk for either externalizing or internalizing behavior disorders. The second gate also relies upon teacher judgment of student behavior and requires that pupils who are identified and referred in Stage One on the externalizing and internalizing behavioral dimensions are rated in Stage Two by the teacher in terms of the content of their behavior problem(s): (1) a critical events index, and (2) a frequency index that assesses child status on an exemplar of externalizing and internalizing behavior problems. Rated pupils who exceed normative criteria on the Stage Two instruments are then independently assessed in Stage Three within natural settings via direct observations conducted by a school professional other than the teacher, e.g., school psychologist, school social worker, counselor, and so forth.

In Stage Three, a school professional assesses the target pupil(s) on two important measures of school adjustment using direct observation procedures. These are: (1) academic-encouraged and recorded during independent seatwork periods, and (2) amount and quality of social behavior during free play on the playground. The target pupil's status on these measures is compared to age- and sex-appropriate normative levels to determine initial eligibility at this stage. Those pupils whose behavioral levels exceed normative levels on either criterion(s) referred to special education for further evaluation and testing for determination of eligibility. If in this process, child study teams may administer a range of standardized tests and diagnostic procedures and collect any other data relevant to the referral decision.

Procedures and instruments through the first part of screening Stage Three are completely standardized and self-contained. Stage Two and Three instruments will have been administered and standardized in the classroom and playground settings. Stage Three established on them to: (a) facilitate decision-making in moving from one screening stage to another, and (b) assist in determining eligibility in relation to generalized normative criteria.

It is recognized that pupils identified in Stage One and/or Stage Two may exceed normative levels and expectations for the referring setting, but may not meet the necessary criteria for certification as SBD. This outcome highlights the importance of using empirically-based normative criteria that are independent of a specific setting and generalized in nature to certify referred pupils as severely behavior problems.

In this screening-identification procedure, each screening stage becomes progressively more expensive in terms of assessments made. However, the probability of the student meeting eligibility increases as one moves through each stage. Figure One below graphically illustrates the screening and identification process involved in the SSBD application.

The results of each assessment stage serve to validate those of the previous stage(s). At the completion of Stage Three, data and information are available to: (a) define the specific content of the referred child's behavior disorder (i.e., adaptive behavior deficits and maladaptive behavior excesses) for the purpose of planning a remediation program, and (b) make normative comparisons to determine the pupil's relative behavioral status and eligibility. The system's component procedures were designed to be compatible with P.L. 94-142 regulations in screening and the determination of eligibility.

Rationale

The screening and identification procedure described above is based upon seven very important assumptions. These are:

1. Teachers, as a rule, tend to over- refer pupils with aversive, externalizing behavior disorders and under-refer those with less aversive, internalizing disorders.

2. Teacher judgment and appraisal of child behavior is a valid, accurate, cost-effective, and greatly under-utilized resource in the screening/identification of the full range of SBD children in the school setting.

3. Relative under-screening and identification procedures can be implemented in school settings that: (a) take full advantage of the numerous opportunities that teachers to evaluate and make judgments about pupil behavior under different conditions, (b) require teachers to evaluate pupils in relation to the full range of behavior disorders occurring in the school setting, (c) require the teachers to systematically screen each pupil enrolled in her/his class, and (d) provide an equal opportunity for pupils to be identified for both externalizing and internalizing types of behavior disorders.

4. A combination of teacher rankings/ratings and direct observations are necessary to adequately assess child behavior for the purposes of screening, identification and determining eligibility. In this context, the use of teacher observations of both adaptive/behavioral competencies and maladaptive behaviors that disrupt behavioral-social adjustments.

5. Academic- and social behavior on the playground are important indicators, respectively, of the two major behavioral adjustments students are expected to make in school. These are teacher-pupil adjustment within a classroom context and peer-to-peer social adjustment within free-play settings (Walker, McConnell, & Clarke, in press).

6. Externalizing and internalizing dimensions encompass almost all of the behavior disorders that are commonly observed to occur in school.

7. Early identification of children exhibiting externalizing and/or internalizing behavior problems is of crucial importance, since numerous studies document the long-term stability of such behavior (see Off, Nettles, & Golden, 1972; Waldrop & Halver- son, 1975). Similarly, follow-up studies on behavior problems that emerge in elementary age school children who are rejected by their peers on social contact and peer acceptance tend to have significant mental health problems up to 13 years later (Cowan, Pederson, Babbin, Lizzio, & Trost, 1973).

Figure One

Multiple-Gating Assessment Procedure for Identification of Behavior Disordered Students

Until the last decade, there was a professional consensus that teacher judgment was not valid or useful in making decisions about student behavior. This was largely due to four decades of research that showed teacher judgments about student behavior/performance attributes relevant to school success to be negatively correlated with the equivalent judgments of clinicians (Walker, 1982). However, when teacher judgment of student behavior/performance is validated against external accuracy standards/criterion such as achievement, direct observations, sociometric ratings and so forth, it has proven to be highly accurate and very cost effective (see Boldstad, 1974; Gussow, Walker, Todd, & Hops, 1979; Gresham, in press; Lakin, 1976; Nelson, 1977; Schaal, 1982).

Examples of noted, notable cases (see Kirschenbaum, Marsh, & Devage, 1977), teacher judgment has not been systematically across screening systems to identify at-risk students. Reports of such rass screening efforts in relation to child behavior disorders have also been conspicuous by their relative absence in the professional literature. Without systematic, mass-screening efforts of the type proposed herein, the SBD student population will continue to be grossly understudied and therefore unreachable because of their relative inability to access needed services.

It is extremely important that teacher judgment be supplemented with direct observations of the target student's behavioral adjustment in classroom and playground settings. SSBD students characteristically experience great diff-
facilities in these two adjustment areas and current performance within them is often indicative of more serious problems. In this regard, the system described here was not intended to replace, but simply to augment the data-collection and decision-making processes currently in use by child study teams in LEAs.

Instrument Development and Preliminary Research

The SSBD incorporates information and procedures from several different sources and lines of research. These include: (a) research on the accuracy and validity of structured teacher judgments regarding child behavior in the classroom, (b) bi-polar behavioral classification systems, (c) the use of teacher ranking procedures to order pupils on dimensions related to classroom performance and adjustment (i.e., achievement, popularity, social contact frequency, and so forth), and (d) the development of normative data bases and decision criteria on both teacher rating instruments and direct observation (Greenwood et al., 1979). The instruments and procedures in each of the three SSBD stages have been developed and refined in prior research by the authors and their colleagues.

For example, the SSBD Stage One ranking procedures were developed from prior research by Greenwood et al. (1979) on the successful development of a model screening and assessment system for identifying preschool children at risk for severe withdrawal. Ranking procedures of this type were extensively tested with a large number of teachers at the preschool level. The Stage Two instruments (Critical Events Index and Behavioral Frequency Index) were developed from prototype items lists previously contributed by Walker and his colleagues (Walker, 1982; Walker et al., 1985). These items have been extensively trialed, refined, and socially validated by both regular and special education teachers as measures of teacher behavioral standards and child behavioral status (Walker & Rankin, 1983; Hersh & Walker, 1983). The Stage Three observation codes were derived from behavioral definitions and coding instruments reported in the professional literature, as well as from coding systems developed and refined by the authors in prior research.

A prototype version of the SSBD model screening procedures was developed in November, 1984. The system has been extensively trial tested since that time. For example, the instructions and procedures were in use at the assessment Stage One have been revised on three occasions in response to feedback from trial usage of the SSBD with samples of preschool, regular, and special education teachers. To date, the system has been administered to over 300 pupils in school districts within Oregon and Washington states. In addition, limited trial usage of the instruments comprising assessment Stages Two and Three. Pilot studies and their results to date are reviewed briefly below.

Interater Reliability

During the 1984-85 school year, the Stage One ranking procedures were trial tested in 15 classrooms that involved team teaching or teacher-side instruc- tions in two settings. In each case, both teachers appeared to have equal knowledge of the pool of children selected.

Across these classrooms, interrater correlations were consistently higher for externalizing than for internalizing rank ordering dimensions and ranged from approximately .75 to .85. The authors conducted the final set of trial tests for the Stage One procedures in the 1984-85 school year, on the externalizing and internalizing rank-order dimensions ranged from .69 to .94.

Test-Retest Stability

Estimates of the test-retest stability of the Stage One rank ordering procedures have been estimated to date for two-, three-, and four-week time intervals. A test-retest estimate of the stability of the final form of the Stage One ranking procedures involving four teachers and a two-week interval averaged .80 (Rho) for externalizing and .74 (Rho) for internalizing. A subsequent, one month test-retest estimate of the stability of the Stage One teacher rankings involving 17 elementary teachers yielded an externalizing (Rho) of .76 and an internalizing (Rho) of .74.

The stability of the Stage Two frequency index was estimated over a one month period. This instrument uses a Likert-scale rating format and consists of 78 items. Section one consists of 12 items that measure adaptive teacher and peer related social behavior, and section two consists of 65 items that measure maladaptive social behavior directed toward either teachers or peers. The test-retest for 78 elementary pupils rated by their respective teachers (N=17) over a one month interval was .88 for the adaptive items and .82 for the maladaptive items.

Concurrent Validity

Multidisciplinary teams of school professionals had previously placed a classified teacher disordered pupil in 10 of the regular classroom settings sampled in the above studies. The authors and their colleagues did not discuss or mention these pupils in discussions of rank ordering tasks with the involved teachers. Results indicated that 9 of the 10 pupils were placed in the top three ranks by their teachers on the externalizing behavioral dimension. The tenth pupil was ranked fifth on the internalizing dimension. These results suggest that the SSBD is sensitive to already identified pupils who have been previously identified as behavior disordered.

Discriminant Validity

The academic-learning-time code in assessment Stage Three was used during the past year as one measure within an ongoing project of normal and antisocial grade four boys. The ALT code was used to conduct assessments on two separate occasions for 26 subjects (20 normal; 16 antisocial) within an academic setting. The ALT percentage was 85% and 68% for the normal and antisocial pupils, respectively. This difference was statistically significant and suggests that the code is sensitive to behavioral differences known to exist between these two populations of children.

Table 1 contains means, ranges and standard deviations on the Stage Two rating instruments for a sample of 10 BP and a sample of 6, randomly selected normal pupils. The 10 BP pupils were included in the concurrent validity study described above. These results suggest the Stage Two instruments may discriminate between BP and normal children. However, much larger samples will be necessary to answer this question definitively.

Observation Code Interobserver Agreement

The two observation codes were trial tested extensively in natural settings during the 1984-85 school year. Interobserver reliabilities were consistently in the .80 to .90 range for both codes and observer training times on the codes were quite brief.

These preliminary studies and results suggest that the instruments and procedures comprising each of the assessment stages of the SSBD show promise of achieving the functions for which they were designed. A major study of the SSBD, involving test-retest rankings and ratings over a one month period by 18 elementary teachers and behavioral observations of high ranked externalizing and internalizing pupils as well as unselected, contrast pupils, is currently being conducted. A report of this study should be available in September, 1986.

Conclusion

The major advantages of the screening-identification model proposed herein are that: (a) it requires the teacher to evaluate each pupil in his/her class in relation to standardized and carefully specified criteria, i.e., externalizing and internalizing behavioral descriptions, (b) it produces each pupil with an equal chance to be identified for externalizing and internalizing behavior problems, (c) it combines teacher rankings/ratings and direct observation data in the appropriate child behavior, and (d) it represents a standardized assessment procedure with accompanying normative data on both teacher rating and direct observation instruments. The authors believe the system's use will produce higher quality referrals, will prove to be cost effective, and will effectively screen mainstream pupils who may be at risk for behavior disorders. However, it should be noted that the validity, cost efficiency, and practical utility of the system remains to be demonstrated.

References


Table 1. Means, Standard Deviations and Ranges for Normal and Behaviorally Disordered Elementary Aged Pupils on the SSBD Stage Two Instruments

<table>
<thead>
<tr>
<th>Critical Events Index (CEI)</th>
<th>Externalizing Index</th>
<th>Internalizing Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
</tr>
<tr>
<td>Normals (N = 6)</td>
<td>.83</td>
<td>.93</td>
</tr>
<tr>
<td>Behavior Disorder Pupils (N = 9)</td>
<td>4.6</td>
<td>1.73</td>
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</tbody>
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Combined Frequency Index (CFI) for Externalizing and Internalizing Behavioral Dimensions

<table>
<thead>
<tr>
<th>Adaptive Behavior</th>
<th>Maladaptive Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Normals (N = 6)</td>
<td>43.8</td>
</tr>
<tr>
<td>Behavior Disorder Pupils (N = 9)</td>
<td>26.9</td>
</tr>
</tbody>
</table>

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Screening Behavior Disorders

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SET – Review
Continued from Page 18
1. Few or no attempts to monitor. What do you do with three times a day or three times a week? A more careful definition of ranges would be helpful.
2. Finally, the authors need to specify more clearly where it would be inappropriate to use their procedures. What are the limits in the application of the scales to various kinds of high school classes? Are they appropriate for P.E., music, art, etc.? SET has a lot of promise as an aid in improving teaching. The fact that I could criticize some of the details was made possible because they did get down to specifics.

Reviewed by
Wes Becker
University of Oregon

CAL Vocabulary
Continued from Page 7


Videodisc Fractions
Continued from Page 10
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